

Old Spec 2.1 Answers from paper 5

- 1.
- (a)(i) Order
- (ii) Family
- (iii) Genus
- (iv) Species
- [4 correct = 2 marks 3 correct = 1 mark] [2]
- (b) (i) (Two names first name =)genus [1]
- (Second name =) species [1]
- (ii) *Panthera tigris* (not: *P. tigris*) [1]
- (iii) *Equus zebra* and *Gorilla gorilla* both for [1]
- (not: *E. zebra*/*G. gorilla*?*zebra/gorilla*)
- (c) (i) Genetic/DNA/RNA fingerprinting / (gel) electrophoresis [1]
- (not: DNA profiling)
- (ii) They split/cut the DNA/RNA into fragments [1]
- (not: ref plasmids)
- At specific points/ sequences/bases/ into a number of fragments of specific size [1]
- (iii) *Equus asinus* and *Equus zebra* [1]
- (iv) They belong to the same genus/differ only by species [1]
- And will therefore share more common/similar DNA [1]
- Total 12**

2.

(a)

Kingdom	<u>Animalia</u>
Phylum	<u>Chordata</u>
Class	<u>Mammalia</u>
<u>order</u>	<u>Carnivora</u>
<u>family</u>	<u>Felidae</u>
Genus	<u>Panthera</u>
Species	<u>tigris</u>

- (b) More closely related, fewer number of differences / high number of shared genes. ora (comparison needed) [1]

(Total 7)

3.

- (a) Chordata

Pisces/Fish

[2]

- (b) Unable to reproduce/interbreed with each other to produce fertile/viable offspring; (*not; they cannot reproduce*)

Any sensible reason for not interbreeding, e.g. behaviour.
(not: geographical isolation)

Have different characteristics/features/appearance.

Any 2

[2]

- (c) Reference to DNA/genetic fingerprinting/base sequencing/
immunological comparison;

Close similarities should be present between the species.
(i.e. technique and related result)

[2]

- 4.
- (a) 2, 5, 4, 7, 6, 1, 3 [1]
- (b) ~~Protoctista~~;
Fungi;
~~Animalia~~;
Plantae; [4]
- (c) Cell Wall of ~~murein~~ / not cellulose;
(~~not~~: chitin)
No nuclear membrane/nucleus;
Circular DNA;
DNA not associated with histones; [Max 3]
No membrane bound cell organelles /mitochondria/
~~chloroplasts~~ etc.;
Small ribosomes/70S ribosomes
(~~not~~: large)
No meiosis;
Plasmids
- (d) Offspring infertile [1]

- 5.
- (a) ~~animalia, plantae, fungi, monera/prokaryotae, protoctista~~
- all five for 2 marks, 1 wrong or more than 5 for 1 mark 2
(~~not~~: ~~protist/protozoa~~)
- (b) (i) ~~phylum~~, class, order, family, genus 2
(1 mark for order, 1 mark for size)
- (ii) ~~meat~~ eating (predator)/large canine/carnassial teeth/ 1
powerful jaws/vertical movement of jaw
(~~not~~: carnivore/feeds on other animals)
- (iii) ~~shortened muzzle/retractile claws/fewer teeth than canidae~~ 1
(~~not~~: fewer teeth unequal; (ii) and (iii) independent marks)
- (c) (i) Genus and Species, 1 for each 2
- (ii) ~~avoids~~ confusion of local common names/different 1
languages i.e. ref. to naming or identifying
(~~not~~: Latin understood by all)
- [9]

6.

- (a) mitosis 1
- (b) (i) *Fusarium* 1
- (ii) banana plants genetically identical / clones;
same susceptibility / lack of resistance to Panama
disease;
no / little mutation;
close planting.
(Any 3) 3
- (c) natural selection;
fungicide is selective agent / selective pressure;
variation between individuals;
chance / random mutation;
some individuals have selective advantage / better
chance of surviving;
survival of resistants / death of non-resistants (not:
survival of the fittest);
mutation / ability to survive pesticide passed on to
offspring;
increased allele frequency.
(Any 5) 5
- (d) (i) normally achieved with breeding programmes;
(using) reservoir of genes / alleles;
bananas are sterile / seedless / reproduce
asexually;
no easy way to incorporate new genes / alleles.
(Any 2) 2
- (ii) genetic engineering / induced mutation / gene
splicing / inserting a (resistant) gene. 1

[13]